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EXAMINER

RUTTEN, JAMES D

ART UNIT PAPER NUMBER

2192

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,160	KABE, AKIYOSHI	
	Examiner	Art Unit	
	J. Derek Rutten	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to Applicant's amendment dated 11/22/2005, responding to the 8/25/2005 Office action provided in the rejection of claims 1-13, wherein claims 1, 2, 5, 6, and 8-11 have been amended, claims 12 and 13 have been canceled, and new claims 14-17 have been added. Claims 1-11 and 14-17 remain pending in the application and have been fully considered by the examiner.

2. Applicant's arguments, see page 13, filed 11/22/05, with respect to the rejection(s) of claim 1 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the "Background Art" section appearing on pages 1-10 of the originally filed specification.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2192

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Amendment

4. Amendments to the drawings submitted on 11/22/05 appear to be responsive to the previous Office Action. However, the drawings do not comply with 37 CFR 1.121(d) since they do not contain a label in the top margin as "Replacement Sheet". As such, these drawings are not acceptable and new drawings must be submitted with the proper labels.

5. Amendments to the claims have overcome the 35 U.S.C. § 112 rejections. Accordingly, these rejections are withdrawn.

Response to Arguments

6. Applicant's arguments on pages 10-12, filed 11/22/2005, have been fully considered but they are not persuasive. Further explanation is provided below.

7. In response to applicant's argument that Wright is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Applicant has suggested that the CNC control system discussed in Wright "has nothing to do with various software development tools disclosed in Almond." However, Wright is not simply about a CNC control system, but is

Art Unit: 2192

also directly related to the use of object-oriented software development to implement the control system. Both references are interested in software development and are therefore considered analogous.

8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, motivation comes from Wright, which teaches that external machines can be controlled in an object oriented control system (column 6 lines 12-19).

9. On pages 11-12 of the response, Applicant essentially argues that the references fail to disclose sharing a name that corresponds to an object. In the argument, Applicant cites Almond column 3 lines 11-17 and column 6 lines 52-61, which discusses the separation of object storage from their names, resulting in the possible use of multiple names that point to the same object. Applicant's argument appears to suggest that since multiple names can be used, a single shared name is not inherently present. However, Almond discloses an "Object Cycle Server" that communicates with various clients through a RPC interface (see column 5 line 28 – column 6 line 40, also Fig. 2). A client connects to the server in order to manipulate objects. Further inspection of Almond reveals in FIG. 7C that a variable name is shared between the "data sharing unit" (server) and the "program generation tool" (client) in the form of a version number. This information is provided for the client by the server and could only have been accomplished

Art Unit: 2192

through the sharing of the variable name corresponding to the object (Further description of Figure 7 is found in column 8 lines 6-27). While it is agreed that Almond provides the capability to use several names to reference a single object, sharing nonetheless must occur in a client/server system such as Almond. As such, Applicant's argument is not persuasive.

Claim Objections

10. Claim 6 is objected to because of the following informalities: The newly added phrase "is notified of the object" should be --are notified of the object--, in order to agree with the plural subject "program generation tools". Appropriate correction is required.
11. Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. The limitations present in amended claim 11 appear to be identical to the newly amended limitations present in parent claim 1.
12. Claim 16 is objected to because of the following informalities: The phrase "a object managing table" should be --an object managing table--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1, 3-5, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record U.S. Patent 6,112,024 to Almond et al. (hereinafter "Almond") in view of prior art of record U.S. Patent 5,453,933 to Wright et al. (hereinafter "Wright") further in view of the "Background Art" section of the originally filed specification (pages 1-10, hereinafter "the Background").

In regard to claim 1, Almond discloses:

A programming device (See Almond column 50 line 56-column 52 line 16)

comprising:

a group of program generation tools to generate programs See column 5 line 65

– column 6 line 7:

As shown, the interfaces 240 communicate or "talk" (i.e., communicates via an understood protocol) with various clients. Client 250, for example, comprises a PowerBuilder™ development environment which is executing on a client machine (e.g., workstation or personal computer connected to a network). Other clients, such as rapid application development environment 260 (e.g., Powersoft Optima++™) and C++ development environment 270 (e.g., Microsoft® Visual C++), communicate with the Object Cycle Server 211 via the interfaces 240.

a data sharing unit adapted to interface with said group of program generation tools to share a variable name and attribute data definitions corresponding to an object of each of said plurality of devices, See column 5 lines 48-58, and column 8 lines 16-18

The Object Cycle Server 211 communicates over a wire or a network with multiple clients. In particular, the Object Cycle Server 211 includes a Remote Procedure Call (RPC) interface 215, which allows the server 211 to be easily integrated into the operation of the various clients. In an exemplary embodiment, the RPC interface 215 employs Microsoft Remote Procedure Call protocol (available from Microsoft Corp. of Redmond, Wash.) for surfacing an Object Cycle API (Application Programming Interface) 240a, 240b, 240c, 240d for use by each of the development system clients.

...

As illustrated in FIG. 7B, the user can select (e.g., right click) individual objects for requesting actions (e.g., check out and check in) and properties specific to the object.

Note that a name is inherently shared in order to reference the properties (attribute data definitions) that correspond to an object. If the name is not shared, then there is no point of reference for a client to reference properties. Also, FIG. 2 shows that objects associated with each client (device), are shared by an object server (data sharing unit).

wherein the objects are shared by said program generation tools for generating the programs. See column 2 lines 46-48:

The RPC interface allows the system to surface an Object Cycle API (Application Programming Interface) for development system clients.

Almond does not expressly disclose a control system that controls a group of external machines or *wherein the plurality of devices includes at least two devices selected from a group of: a display device displaying status of each of the machines, a system supervision device detecting an abnormal condition of a production line comprising the group of machines, and a programmable controller for controlling one or more of the machines.* However, in an analogous environment, Wright teaches: *for each of a plurality of devices forming part of a control system that controls a group of external machines* See Wright column 6 lines 29-40:

A second class of object types is provided which represent instances of machine tool components, such as a table (axes), a spindle, tool changer or operator console. Again, some objects may inherit attributes of other objects. For example, an axis group, namely an object for simultaneously controlling multiple axes to shape complex three-dimensional objects, may inherit attributes of a single axis object. Other objects may be composite objects of other tool objects. For example a tool changer may be a composite object of a collection of different milling bits which may be held in the tool changer (in addition to having its own attributes).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Wright's teaching of a control system of external machines with Almond's data sharing unit. One of ordinary skill would have been motivated to share

and reuse compositions of previously defined objects used in a control system of devices (Wright column 5 lines 58-62).

Also in an analogous environment, the Background teaches generating programs for a plurality of devices including at least two devices selected from the group of *a display device displaying status of each of the machines, a system supervision device detecting an abnormal condition of a production line comprising the group of machines, and a programmable controller for controlling one or more of the machines*. See page 1 paragraph 2:

In a control system constructed of a variety of devices, such as programmable controllers, a display device as a display means and a system supervision device as a supervisory computer, program units necessary for operating the devices in the control system have conventionally been programmed by using separate dedicated tools, respectively and written into the associated devices, such as programmable controllers, display device, communication units and a system supervision device, respectively.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Background's teaching of device programs with Almond's object sharing. One of ordinary skill would have been motivated to provide progressive object versions in a multi-tool environment (Almond column 6 lines 32-35).

In regard to claim 3, the above rejection of claim 1 is incorporated. Almond further discloses: *an object data definition unit adapted to perform data definition and data modification of the objects shared in the data sharing unit, wherein all objects involved in the object sharing are centrally managed*. See column 2 lines 39-42.

In regard to claim 4, the above rejection of claim 1 is incorporated. Almond further discloses: *a system configuration tool, being registered with a subset of objects, said subset of said objects being basic type objects having a high frequency of use in the devices in the control system, the system configuration tool being adapted to select an object from the basic types objects for use in the control system.* See column 8 lines 16-27.

In regard to claim 5, Almond discloses:

wherein the variable name and attribute data corresponding to said object are stored for use by program generation tools other than said one of the program generation tools. See column 2 line 66 – column 3 line 2:

The approach allows a multi-tool environment, each concerned with the development of its own particular type of object (e.g., a .cpp file for Microsoft Visual C++) to share a version control repository. From the perspective of the Object Cycle Server, each client is simply "a client" (without regard to proprietary nature) which desires to store "an object." The Object Cycle Server, in turn, **maps the object into a schema**--a meta model--which facilitates version control.

All further limitations have been addressed in the above rejection of claim 1.

In regard to claim 11, all limitations have been addressed in the above rejection of claim 1.

In regard to claim 14, Almond does not expressly disclose: *wherein the group of program generation tools comprises at least two out of a group of: a display program generation tool, a control program generation tool, a communication program*

generation tool, and a system supervision program generation tool. However, in an analogous environment, the Background teaches this group of program generation tools. See FIG. 8 elements 171-174. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Background's specific program generation tools with Almond's program generation tools. One of ordinary skill would have been motivated to generate a device specific program in order to take advantage of a specific devices capabilities.

15. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almond, Wright, and the Background, as applied to claims 1, 3-5, and 11-13 above, and further in view of "Versions and change notification in an object-oriented database system" by Chou et al. (hereinafter "Chou").

In regard to claim 2, the above rejection of claim 1 is incorporated. Almond does not expressly disclose notification in relation to programming objects in terms of a particular reference tool. However, in an analogous environment, Chou teaches: *programming action in one of the program generation tools relating to an object acts as a trigger to store a setting of the object to the data sharing unit together with an indication of the program generation tools which reference said object, and the sharing of said object with other program generation tools other than said one of the program generation tools comprises notifying the program generation tools other than said one of the program generation tools which reference said object, of said object.* See Section 4.3

Art Unit: 2192

on page 280. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Chou's notification with Almond's data sharing. One of ordinary skill would have been motivated to propagate the changes so that all users would have an up-to-date version.

As per claim 10, Almond discloses:

A programming method ..., the method comprising:

according to a pre-designed virtual object, defining an object name and attribute

data See column 2 lines 57-59:

Here, the client can instruct the system to check in any arbitrary object which the user desires versioning control for.

registering information about the object ...in a data sharing unit; See column 2 lines 57-59 as cited above.

Notifying, of each object, a program generation tool for the specified devices that will use the object; and Chou

Almond does not expressly disclose the specification or programming of a device that will use the object. However, in an analogous environment, Wright teaches:

specifying a device that will use the object, and... performing programming of the devices by the notified program generation tools. Wright. See column 6 lines 43-48:

For example a drill process object can be defined to hold all the information needed to define a drilling process, and this information may be sent in a message to a Machine Class spindle object (to move the spindle down and form the hole) and to an axis group object (to position the workpiece in the proper location).

All further limitations have been addressed in the above rejection of claims 1 and 2.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Wright's device programming with Almond's data sharing unit. One of ordinary skill would have been motivated to provide a machine control system that is easily modifiable (Wright column 5 lines 58-62).

16. Claims 6, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almond, Wright, and the Background, as applied to claim 5 above, and further in view of U.S. Patent 5,907,705 to Carter (hereinafter referred to as "Carter").

As per claim 6, the above rejection of claim 5 is incorporated. Almond does not expressly disclose information about whether or not the object is referenced by program generation tools other than said one of the program generation tools that are registered as using the object are notified. However, in an analogous environment, Carter teaches notifying users of an object when the object is changed (column 4 lines 55-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Carter's teaching of notification in Almond's Object Cycle Server. One of ordinary skill would have been motivated to alert any potentially impacted user or tool of changes in an object.

As per claim 8, all limitations have been addressed in the above rejection of claim 6.

In regard to claim 9, Almond discloses saving objects in a storage area for subsequent retrieval. See Fig. 2 element 220.

17. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Almond, Wright, the Background, and Carter as applied to claim 6 above, and further in view of “Linkers & Loaders” by Levine (hereinafter referred to as “Levine”).

As per claim 7, the above rejection of claim 6 is incorporated. Almond does not expressly disclose *a detection unit adapted to detect any overlap at a referenced part among the objects when a program is generated by the program generation tools other than said one of the program generation tools.*

However, in an analogous environment, Levine teaches that programs can be created from multiple subprograms, but that the subprograms have to be loaded at non-overlapping addresses (page 5 bullet 2: “Relocation”). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Levine’s teaching of non-overlapping subprograms in Almond’s program generation device. One of ordinary skill would have been motivated to protect the integrity of each object by separating their address space.

18. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almond, Wright, and the Background as applied to claim 14 above, and further in view of U.S. Patent 5,734,902 to Atkins et al. (hereinafter “Atkins”).

In regard to claim 15, the above rejection of claim 1 is incorporated. Almond does not expressly disclose: *wherein for each object of each of said plurality devices, the data sharing unit stores the variable name, the attribute data definitions, and a list of devices, from the plurality of devices forming part of the control system, that refer to the object.* However, in an analogous environment, Atkins teaches that an object can be shared among several nodes in a system. This shared object is tracked including the name and data and nodes using the object through the use of a data structure for storage. See column 3 lines 5-10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Atkins' data structure with Almond's storage. One of ordinary skill would have been motivated to maintain concurrency of a shared object (Atkins column 3 lines 11-13).

In regard to claim 16, the above rejection of claim 15 is incorporated. Almond does not expressly disclose *wherein the data sharing unit stores a object managing table comprising the variable name, the attribute data definitions, the list of devices, and an update status, for each object of each of said plurality devices, and wherein the update status indicates whether or not the corresponding object has been updated.* However, Atkins teaches that a used-by table and update status. See column 4 lines 22-49. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Atkins' table with Almond's storage. One of ordinary skill would have been motivated to use a data structure to store information in order to promote efficiency.

In regard to claim 17, the above rejection of claim 16 is incorporated. Almond does not expressly disclose: *wherein, when the corresponding object has been updated, the data sharing unit accesses the list of devices for the corresponding object and notifies the program generation tools for each of the devices on the list.* However, Atkins teaches notification of modification to nodes in a list. See column 4 lines 39-43. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Atkins' notification with Almond's tools. One of ordinary skill in the art would have been motivated to maintain data coherency.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (571) 272-3703. The examiner can normally be reached on T-F 6:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2192

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jdr

A handwritten signature in black ink, appearing to read 'Tuan Dam', with a long horizontal flourish extending to the right.

TUAN DAM
SUPERVISORY PATENT EXAMINER